

REMARKS

Claims 74-79 are pending in the present application. Claims 74-79 are finally rejected under 35 USC 102(e) as being anticipated by U.S. Patent No. 6,179,689 to Ohno et al. (“the Ohno patent”) as set forth in the previous Office Action.

The disclosed embodiments of the invention will now be discussed in comparison to the cited references. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the cited references, do not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

The present application discloses methods and apparatuses for installing an elongated planarizing medium on a planarizing machine. In one embodiment shown in Figure 7 of the present application, a removable polishing pad cartridge 470 includes an elongated cartridge frame 472 having a supply roll 424 and a take-up roll 423 spaced apart from each other along the length thereof. An elongated planarizing medium 440 is pre-attached to both the supply roll 424 and the take-up roll 423. The supply roll 424 and the take-up roll 423 each include an axle 471 that extends through the respective roll. Each axle 471 has a spline aperture 474 that extends through the axle 471 and is configured to receive a spline 427 of the planarizing machine. The removable polishing pad cartridge 470 may be installed on the planarizing machine by inserting the splines 427 into each of the spline apertures 474 of each axle 471. In one embodiment, the supply roll 424 and the take-up roll 423 are installed one at a time onto respective splines 427. In another embodiment, the supply roll 424 and the take-up roll 423 are installed simultaneously onto respective splines 427.

The compact and light weight cartridge frame 427 facilitates installation of the removable polishing pad cartridge 470 because it may be easily manually grasped during installation and removal. Furthermore, the elongated planarizing medium 440 is pre-attached to both the supply roll 424 and the take-up roll 423 so it can reduce the amount of time required to exchange one polishing pad 440 for another, thus, increasing the efficiency of the exchange process.

The removable polishing pad cartridge 470 may be installed on the planarizing machine so that the planarizing surface of the elongated planarizing medium is oriented at a non-horizontal angle, and may be oriented vertically. One benefit of orienting the planarizing surface of the elongated planarizing medium substantially non-horizontal is that planarizing liquid which can entrain particulates removed from a substrate being planarized can run off the planarizing surface under the force of gravity thereby preventing the substrate from being scratched or otherwise damaged during planarizing.

The Examiner has cited the Ohno patent. Figures 6 and 7 of the Ohno patent disclose a supply roller 11 and a take-up roller 12. An abrasive tape 2 is wound on the supply roller 11 and the take-up roller 12. The supply roller 11 and the take-up roller 12 are mounted in a housing (cassette 15). The housing (cassette 15) is configured to be mounted in a polishing apparatus.

The Ohno patent does not disclose or fairly suggest an elongated member having first and second attachment portions spaced apart with a supply roll coupled to the first attachment portion and a take-up roll coupled to the second attachment portion, the supply roll and the take-up being unenclosed by a housing. The housing (cassette 15), which appears to hold and enclose the supply roller 11 and take-up roller 12, is bulky and difficult to change the abrasive tape 2. Unlike the Applicant's embodiments, the Ohno patent does not disclose a compact and light weight cartridge frame that facilitates installation and removal of a cartridge that includes a planarizing medium on a polishing apparatus.

Furthermore, the Ohno patent does not disclose or fairly suggest installing a cartridge including a supply roll and a take-up roll having an elongated planarizing medium attached thereto so that a planarizing surface of the elongated planarizing medium is oriented substantially non-horizontal. The Ohno patent does not mention or teach the benefits that orienting the planarizing surface of the elongated planarizing medium substantially non-horizontal so that planarizing liquid that entrains particulates removed from a substrate being planarized can run off the planarizing surface under the force of gravity. In all figures of the Ohno patent, the planarizing surface is oriented horizontally.

Turning now to the claims, the patentably distinct differences between the Ohno patent and the claim language will be specifically pointed out. Presently amended claim 74 recites “providing a polishing pad cartridge comprising an elongated member including first and second attachment portions spaced apart from each other, the polishing pad cartridge further comprising a supply roll coupled to the first attachment portion and a take-up roll coupled to the second attachment portion, the supply roll and the take-up roll being unenclosed by a housing; installing the supply roll on a supply spindle of the planarizing machine while the elongated planarizing medium is attached to both the supply roll and the take-up roll; and installing the take-up roll on the take-up spindle of the planarizing machine while the elongated planarizing medium is attached to both the supply roll and the take-up roll. The Ohno patent does not disclose the above limitations and specifically does not does providing a polishing pad cartridge comprising an elongated member including first and second attachment portions spaced apart from each other, the polishing pad cartridge further comprising a supply roll coupled to the first attachment portion and a take-up roll coupled to the second attachment portion, the supply roll and the take-up roll being unenclosed by a housing and installing such a cartridge on the spindles of a planarizing machine.

Presently amended claim 77 recites “installing a supply roll on a supply spindle of the planarizing machine while the elongated planarizing medium is attached to both the supply roll and a take-up roll; and installing the take-up roll on a take-up spindle of the planarizing machine while the elongated planarizing medium is attached to both the supply roll and the take-up roll; and wherein installing the supply roll and installing the take-up roll comprises orienting a planarizing surface of the elongated planarizing medium substantially non-horizontally. Presently amended claim 77 is patentable over the Ohno patent because the Ohno patent does not disclose or fairly suggest installing the supply roll and installing the take-up roll so that the planarizing surface of the elongated planarizing medium is oriented substantially non-horizontally. Claims depending from claims 74 and 77 are also allowable due to depending from an allowable base claim and further in view of additional limitations recited in the dependent claims.

All of the claims remaining in the application (claims 74-79) are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

DORSEY & WHITNEY LLP

A handwritten signature in black ink, appearing to read "Marcus Simon".

Marcus Simon
Registration No. 50,258
Telephone No. (206) 903-8787

MS:clr

Enclosures:
Postcard

DORSEY & WHITNEY LLP
1420 Fifth Avenue, Suite 3400
Seattle, Washington 98101-4010
(206) 903-8800 (telephone)
(206) 903-8820 (fax)

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